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Ile Thr Thr Phe Met Gln Ser Glu Ile Val Ser Ser Asn Asp Ala Ile  
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Thr Ser Tyr Asn Lys Asp Lys Ile Leu Asn Asp Ile Asn Ile Gln Ser  
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Phe Gln Arg Leu Asn Ile Pro Phe Pro Cys Asp Cys Ile Gly Gly Glu  
 85 90 95

## P200300646WO SEQ ID list

Phe Leu Gly His Val Phe Glu Tyr Ser Ala Ser Lys Gly Asp Thr Tyr  
 100 105 110  
 Glu Thr Ile Ala Asn Leu Tyr Tyr Ala Asn Leu Thr Thr Val Asp Leu  
 115 120 125  
 Leu Lys Arg Phe Asn Ser Tyr Asp Pro Lys Asn Ile Pro Val Asn Ala  
 130 135 140  
 Lys Val Asn Val Thr Val Asn Cys Ser Cys Gly Asn Ser Gln Val Ser  
 145 150 155 160  
 Lys Asp Tyr Gly Leu Phe Ile Thr Tyr Pro Ile Arg Pro Gly Asp Thr  
 165 170 175  
 Leu Gln Asp Ile Ala Asn Gln Ser Ser Leu Asp Ala Gly Leu Ile Gln  
 180 185 190  
 Ser Phe Asn Pro Ser Val Asn Phe Ser Lys Asp Ser Gly Ile Ala Phe  
 195 200 205  
 Ile Pro Gly Arg Tyr Lys Asn Gly Val Tyr Val Pro Leu Tyr His Arg  
 210 215 220  
 Thr Ala Gly Leu Ala Ser Gly Ala Ala Val Gly Ile Ser Ile Ala Gly  
 225 230 235 240  
 Thr Phe Val Leu Leu Leu Leu Ala Phe Cys Met Tyr Val Arg Tyr Gln  
 245 250 255  
 Lys Lys Glu Glu Glu Lys Ala Lys Leu Pro Thr Asp Ile Ser Met Ala  
 260 265 270  
 Leu Ser Thr Gln Asp Ala Ser Ser Ser Ala Glu Tyr Glu Thr Ser Gly  
 275 280 285  
 Ser Ser Gly Pro Gly Thr Ala Ser Ala Thr Gly Leu Thr Ser Ile Met  
 290 295 300  
 Val Ala Lys Ser Met Glu Phe Ser Tyr Gln Glu Leu Ala Lys Ala Thr  
 305 310 315 320  
 Asn Asn Phe Ser Leu Asp Asn Lys Ile Gly Gln Gly Gly Phe Gly Ala  
 325 330 335  
 Val Tyr Tyr Ala Glu Leu Arg Gly Lys Lys Thr Ala Ile Lys Lys Met  
 340 345 350  
 Asp Val Gln Ala Ser Thr Glu Phe Leu Cys Glu Leu Lys Val Leu Thr  
 355 360 365

## P200300646WO SEQ ID list

His Val His His Leu Asn Leu Val Arg Leu Ile Gly Tyr Cys Val Glu  
 370 375 380  
 Gly Ser Leu Phe Leu Val Tyr Glu His Ile Asp Asn Gly Asn Leu Gly  
 385 390 395 400  
 Gln Tyr Leu His Gly Ser Gly Lys Glu Pro Leu Pro Trp Ser Ser Arg  
 405 410 415  
 Val Gln Ile Ala Leu Asp Ala Ala Arg Gly Leu Glu Tyr Ile His Glu  
 420 425 430  
 His Thr Val Pro Val Tyr Ile His Arg Asp Val Lys Ser Ala Asn Ile  
 435 440 445  
 Leu Ile Asp Lys Asn Leu Arg Gly Lys Val Ala Asp Phe Gly Leu Thr  
 450 455 460  
 Lys Leu Ile Glu Val Gly Asn Ser Thr Leu Gln Thr Arg Leu Val Gly  
 465 470 475 480  
 Thr Phe Gly Tyr Met Pro Pro Glu Tyr Ala Gln Tyr Gly Asp Ile Ser  
 485 490 495  
 Pro Lys Ile Asp Val Tyr Ala Phe Gly Val Val Leu Phe Glu Leu Ile  
 500 505 510  
 Ser Ala Lys Asn Ala Val Leu Lys Thr Gly Glu Leu Val Ala Glu Ser  
 515 520 525  
 Lys Gly Leu Val Ala Leu Phe Glu Glu Ala Leu Asn Lys Ser Asp Pro  
 530 535 540  
 Cys Asp Ala Leu Arg Lys Leu Val Asp Pro Arg Leu Gly Glu Asn Tyr  
 545 550 555 560  
 Pro Ile Asp Ser Val Leu Lys Ile Ala Gln Leu Gly Arg Ala Cys Thr  
 565 570 575  
 Arg Asp Asn Pro Leu Leu Arg Pro Ser Met Arg Ser Leu Val Val Ala  
 580 585 590  
 Leu Met Thr Leu Ser Ser Leu Thr Glu Asp Cys Asp Asp Glu Ser Ser  
 595 600 605  
 Tyr Glu Ser Gln Thr Leu Ile Asn Leu Leu Ser Val Arg  
 610 615 620

<210> 25  
 <211> 623

## P200300646WO SEQ ID list

&lt;212&gt; PRT

&lt;213&gt; Lotus japonicus Gifu

&lt;400&gt; 25

Met Lys Leu Lys Thr Gly Leu Leu Leu Phe Phe Ile Leu Leu Leu Gly  
 1 5 10 15

His Val Cys Phe His Val Glu Ser Asn Cys Leu Lys Gly Cys Asp Leu  
 20 25 30

Ala Leu Ala Ser Tyr Tyr Ile Leu Pro Gly Val Phe Ile Leu Gln Asn  
 35 40 45

Ile Thr Thr Phe Met Gln Ser Glu Ile Val Ser Ser Asn Asp Ala Ile  
 50 55 60

Thr Ser Tyr Asn Lys Asp Lys Ile Leu Asn Asp Ile Asn Ile Gln Ser  
 65 70 75 80

Phe Gln Arg Leu Asn Ile Pro Phe Pro Cys Asp Cys Ile Gly Gly Glu  
 85 90 95

Phe Leu Gly His Val Phe Glu Tyr Ser Ala Ser Lys Gly Asp Thr Tyr  
 100 105 110

Glu Thr Ile Ala Asn Leu Tyr Tyr Ala Asn Leu Thr Thr Val Asp Leu  
 115 120 125

Leu Lys Arg Phe Asn Ser Tyr Asp Pro Lys Asn Ile Pro Val Asn Ala  
 130 135 140

Lys Val Asn Val Thr Val Asn Cys Ser Cys Gly Asn Ser Gln Val Ser  
 145 150 155 160

Lys Asp Tyr Gly Leu Phe Ile Thr Tyr Pro Ile Arg Pro Gly Asp Thr  
 165 170 175

Leu Gln Asp Ile Ala Asn Gln Ser Ser Leu Asp Ala Gly Leu Ile Gln  
 180 185 190

Ser Phe Asn Pro Ser Val Asn Phe Ser Lys Asp Ser Gly Ile Ala Phe  
 195 200 205

Ile Pro Gly Arg Tyr Lys Asn Gly Val Tyr Val Pro Leu Tyr His Arg  
 210 215 220

Thr Ala Gly Leu Ala Ser Gly Ala Ala Val Gly Ile Ser Ile Ala Gly  
 225 230 235 240

Thr Phe Val Leu Leu Leu Ala Phe Cys Met Tyr Val Arg Tyr Gln  
 245 250 255

## P200300646WO SEQ ID list

Lys Lys Glu Glu Glu Lys Ala Lys Leu Pro Thr Asp Ile Ser Met Ala  
 260 265 270  
 Leu Ser Thr Gln Asp Ala Gly Asn Ser Ser Ser Ala Glu Tyr Glu Thr  
 275 280 285  
 Ser Gly Ser Ser Gly Pro Gly Thr Ala Ser Ala Thr Gly Leu Thr Ser  
 290 295 300  
 Ile Met Val Ala Lys Ser Met Glu Phe Ser Tyr Gln Glu Leu Ala Lys  
 305 310 315 320  
 Ala Thr Asn Asn Phe Ser Leu Asp Asn Lys Ile Gly Gln Gly Gly Phe  
 325 330 335  
 Gly Ala Val Tyr Tyr Ala Glu Leu Arg Gly Lys Lys Thr Ala Ile Lys  
 340 345 350  
 Lys Met Asp Val Gln Ala Ser Thr Glu Phe Leu Cys Glu Leu Lys Val  
 355 360 365  
 Leu Thr His Val His His Leu Asn Leu Val Arg Leu Ile Gly Tyr Cys  
 370 375 380  
 Val Glu Gly Ser Leu Phe Leu Val Tyr Glu His Ile Asp Asn Gly Asn  
 385 390 395 400  
 Leu Gly Gln Tyr Leu His Gly Ser Gly Lys Glu Pro Leu Pro Trp Ser  
 405 410 415  
 Ser Arg Val Gln Ile Ala Leu Asp Ala Ala Arg Gly Leu Glu Tyr Ile  
 420 425 430  
 His Glu His Thr Val Pro Val Tyr Ile His Arg Asp Val Lys Ser Ala  
 435 440 445  
 Asn Ile Leu Ile Asp Lys Asn Leu Arg Gly Lys Val Ala Asp Phe Gly  
 450 455 460  
 Leu Thr Lys Leu Ile Glu Val Gly Asn Ser Thr Leu Gln Thr Arg Leu  
 465 470 475 480  
 Val Gly Thr Phe Gly Tyr Met Pro Pro Glu Tyr Ala Gln Tyr Gly Asp  
 485 490 495  
 Ile Ser Pro Lys Ile Asp Val Tyr Ala Phe Gly Val Val Leu Phe Glu  
 500 505 510  
 Leu Ile Ser Ala Lys Asn Ala Val Leu Lys Thr Gly Glu Leu Val Ala  
 515 520 525

## P200300646WO SEQ ID list

Glu Ser Lys Gly Leu Val Ala Leu Phe Glu Glu Ala Leu Asn Lys Ser  
 530 535 540

Asp Pro Cys Asp Ala Leu Arg Lys Leu Val Asp Pro Arg Leu Gly Glu  
 545 550 555 560

Asn Tyr Pro Ile Asp Ser Val Leu Lys Ile Ala Gln Leu Gly Arg Ala  
 565 570 575

Cys Thr Arg Asp Asn Pro Leu Leu Arg Pro Ser Met Arg Ser Leu Val  
 580 585 590

Val Ala Leu Met Thr Leu Ser Ser Leu Thr Glu Asp Cys Asp Asp Glu  
 595 600 605

Ser Ser Tyr Glu Ser Gln Thr Leu Ile Asn Leu Leu Ser Val Arg  
 610 615 620

<210> 26  
 <211> 19  
 <212> DNA  
 <213> Lotus japonicus

<400> 26  
 aatgctcttg atcaggctg 19

<210> 27  
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 <212> DNA  
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<400> 27  
 aggagcccaa gtgagtgcta 20

<210> 28  
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 <212> DNA  
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<400> 28  
 caggaaaaac caccacctgt 20

<210> 29  
 <211> 21  
 <212> DNA  
 <213> Lotus japonicus

<400> 29  
 atggaggcga atacactggt g 21

<210> 30  
 <211> 1853  
 <212> DNA  
 <213> Lotus filicaulis

<400> 30  
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## P200300646WO SEQ ID list

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cgctcgatca	gaacagatca	gcggccca	cttttcatgc	cctgttgact	cacctccttc	180
ttgtgaaaca	tatgtgacat	acacagctca	gtctccaaat	cttctgagcc	tgacaaacat	240
atctgatata	tttgatatca	gtcctttgtc	cattgcaaga	gccagtaaca	tagatgcagg	300
gaaggacaag	ctgggtccag	gccaagtctt	actggtacct	gtaacttgcg	gttgcgccgg	360
aaaccactct	tctgccaata	cctcctacca	aatccagaaa	ggtgatagct	acgactttgt	420
tgcaaccact	ttatatgaga	accttacaaa	ttggaatata	gtacaagctt	caaaccagg	480
ggtaaatacca	tatttggtgc	cagagcgcg	caaagtcgta	ttccctttat	tctgcagggtg	540
cccttcaaag	aaccagttga	acaaagggat	tcagtatctg	attacttatg	tgtggaagcc	600
caatgacaat	gtttcccttg	tgagtgccaa	gtttggtgca	tcccagcgg	acatattgac	660
tgaaaaccgc	tacggtcaag	acttcaactgc	tgcaaccaac	cttccaattt	tgatcccagt	720
gacacagttg	caaagctta	ctcaaccttc	ttcaaataga	aggaaaagca	gcattcatct	780
tctgggtata	cttggtatta	ccctgggatg	cacgttgcta	actgcagttt	taaccgggac	840
cctcgtatat	gtatactgcc	gcagaaagaa	ggctctgaat	aggactgctt	catcagctga	900
gactgctgat	aaactacttt	ctggagtttc	aggctatgta	agcaagccaa	acgtgtatga	960
aatcgacgag	ataatggaag	ctacgaagga	tttcagcgat	gagtgcgaag	ttggggaatc	1020
agtgtacaag	gccaacatag	aaggtcgggt	tgtagcggta	aagaaaatca	aggaagggtg	1080
tgccaatgag	gaactgaaaa	ttctgcagaa	ggtaaatacat	ggaaatctgg	tgaaactaat	1140
gggtgtctcc	tcaggctatg	atggaaactg	tttcttggtt	tatgaatatg	ctgaaaatgg	1200
gtctcttgct	gagtggctgt	tctccaagtc	ttcaggaacc	ccaaactccc	ttacatggct	1260
tcaaaggata	agcatagcag	tggatgttgc	tgtgggtctg	caatacatgc	atgaacatac	1320
ctatccaaga	ataatacaca	gggacatcac	aacaagtaat	atccttctcg	actcgacctt	1380
caaggccaag	atagcaaat	tcgccatggc	cagaacttcg	accaaccca	tgatgccaaa	1440
aatcgatgtc	ttcgctttcg	gggtgcttct	gatagagttg	ctcaccggaa	ggaaagccat	1500
gacaaccaag	gagaacggcg	aggtggttat	gctgtggaag	gatatgtggg	agatctttga	1560
catagaagag	aatagagagg	agaggatcag	aaaatggatg	gacctaatt	tagagagctt	1620
ttatcatata	gataatgctc	tcagcttggc	atccttagca	gtgaattgca	cagctgataa	1680
gtctttgtct	cgaccctcca	tggctgaaat	tgttcttagc	ctctcctttc	tcactcaaca	1740
atcatctaac	cccacattag	agagatcctt	gacttcttct	gggttagatg	tagaagatga	1800
tgctcatatt	gtcacttcca	ttacagcacg	ttaagcaagg	gaaggtaatt	cag	1853

<210> 31  
 <211> 595  
 <212> PRT  
 <213> Lotus filicaulis

<400> 31



## P200300646WO SEQ ID list

Met Ala Val Phe Phe Leu Thr Ser Gly Ser Leu Ser Leu Phe Leu Ala  
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 Leu Thr Leu Leu Phe Thr Asn Ile Ala Ala Arg Ser Glu Gln Ile Ser  
 20 25 30  
 Gly Pro Asp Phe Ser Cys Pro Val Asp Ser Pro Pro Ser Cys Glu Thr  
 35 40 45  
 Tyr Val Thr Tyr Thr Ala Gln Ser Pro Asn Leu Leu Ser Leu Thr Asn  
 50 55 60  
 Ile Ser Asp Ile Phe Asp Ile Ser Pro Leu Ser Ile Ala Arg Ala Ser  
 65 70 75 80  
 Asn Ile Asp Ala Gly Lys Asp Lys Leu Val Pro Gly Gln Val Leu Leu  
 85 90 95  
 Val Pro Val Thr Cys Gly Cys Ala Gly Asn His Ser Ser Ala Asn Thr  
 100 105 110  
 Ser Tyr Gln Ile Gln Lys Gly Asp Ser Tyr Asp Phe Val Ala Thr Thr  
 115 120 125  
 Leu Tyr Glu Asn Leu Thr Asn Trp Asn Ile Val Gln Ala Ser Asn Pro  
 130 135 140  
 Gly Val Asn Pro Tyr Leu Leu Pro Glu Arg Val Lys Val Val Phe Pro  
 145 150 155 160  
 Leu Phe Cys Arg Cys Pro Ser Lys Asn Gln Leu Asn Lys Gly Ile Gln  
 165 170 175  
 Tyr Leu Ile Thr Tyr Val Trp Lys Pro Asn Asp Asn Val Ser Leu Val  
 180 185 190  
 Ser Ala Lys Phe Gly Ala Ser Pro Ala Asp Ile Leu Thr Glu Asn Arg  
 195 200 205  
 Tyr Gly Gln Asp Phe Thr Ala Ala Thr Asn Leu Pro Ile Leu Ile Pro  
 210 215 220  
 Val Thr Gln Leu Pro Lys Leu Thr Gln Pro Ser Ser Asn Gly Arg Lys  
 225 230 235 240  
 Ser Ser Ile His Leu Leu Val Ile Leu Gly Ile Thr Leu Gly Cys Thr  
 245 250 255  
 Leu Leu Thr Ala Val Leu Thr Gly Thr Leu Val Tyr Val Tyr Cys Arg  
 260 265 270

## P200300646WO SEQ ID list

Arg Lys Lys Ala Leu Asn Arg Thr Ala Ser Ser Ala Glu Thr Ala Asp  
 275 280 285  
 Lys Leu Leu Ser Gly Val Ser Gly Tyr Val Ser Lys Pro Asn Val Tyr  
 290 295 300  
 Glu Ile Asp Glu Ile Met Glu Ala Thr Lys Asp Phe Ser Asp Glu Cys  
 305 310 315 320  
 Lys Val Gly Glu Ser Val Tyr Lys Ala Asn Ile Glu Gly Arg Val Val  
 325 330 335  
 Ala Val Lys Lys Ile Lys Glu Gly Gly Ala Asn Glu Glu Leu Lys Ile  
 340 345 350  
 Leu Gln Lys Val Asn His Gly Asn Leu Val Lys Leu Met Gly Val Ser  
 355 360 365  
 Ser Gly Tyr Asp Gly Asn Cys Phe Leu Val Tyr Glu Tyr Ala Glu Asn  
 370 375 380  
 Gly Ser Leu Ala Glu Trp Leu Phe Ser Lys Ser Ser Gly Thr Pro Asn  
 385 390 395 400  
 Ser Leu Thr Trp Ser Gln Arg Ile Ser Ile Ala Val Asp Val Ala Val  
 405 410 415  
 Gly Leu Gln Tyr Met His Glu His Thr Tyr Pro Arg Ile Ile His Arg  
 420 425 430  
 Asp Ile Thr Thr Ser Asn Ile Leu Leu Asp Ser Thr Phe Lys Ala Lys  
 435 440 445  
 Ile Ala Asn Phe Ala Met Ala Arg Thr Ser Thr Asn Pro Met Met Pro  
 450 455 460  
 Lys Ile Asp Val Phe Ala Phe Gly Val Leu Leu Ile Glu Leu Leu Thr  
 465 470 475 480  
 Gly Arg Lys Ala Met Thr Thr Lys Glu Asn Gly Glu Val Val Met Leu  
 485 490 495  
 Trp Lys Asp Met Trp Glu Ile Phe Asp Ile Glu Glu Asn Arg Glu Glu  
 500 505 510  
 Arg Ile Arg Lys Trp Met Asp Pro Asn Leu Glu Ser Phe Tyr His Ile  
 515 520 525  
 Asp Asn Ala Leu Ser Leu Ala Ser Leu Ala Val Asn Cys Thr Ala Asp  
 530 535 540

## P200300646WO SEQ ID list

Lys Ser Leu Ser Arg Pro Ser Met Ala Glu Ile Val Leu Ser Leu Ser  
545 550 555 560

Phe Leu Thr Gln Gln Ser Ser Asn Pro Thr Leu Glu Arg Ser Leu Thr  
565 570 575

Ser Ser Gly Leu Asp Val Glu Asp Asp Ala His Ile Val Thr Ser Ile  
580 585 590

Thr Ala Arg  
595

<210> 32  
<211> 595  
<212> PRT  
<213> Medicago truncatula

<220>  
<221> PEPTIDE  
<222> (1)..(595)

<400> 32

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Leu Met Leu Phe Phe Leu Thr Asn Ile Ser Ala Gln Pro Leu Tyr Ile  
20 25 30

Ser Glu Thr Asn Phe Thr Cys Pro Val Asp Ser Pro Pro Ser Cys Glu  
35 40 45

Thr Tyr Val Ala Tyr Arg Ala Gln Ser Pro Asn Phe Leu Ser Leu Ser  
50 55 60

Asn Ile Ser Asp Ile Phe Asn Leu Ser Pro Leu Arg Ile Ala Lys Ala  
65 70 75 80

Ser Asn Ile Glu Ala Glu Asp Lys Lys Leu Ile Pro Asp Gln Leu Leu  
85 90 95

Leu Val Pro Val Thr Cys Gly Cys Thr Lys Asn His Ser Phe Ala Asn  
100 105 110

Ile Thr Tyr Ser Ile Lys Gln Gly Asp Asn Phe Phe Ile Leu Ser Ile  
115 120 125

Thr Ser Tyr Gln Asn Leu Thr Asn Tyr Leu Glu Phe Lys Asn Phe Asn  
130 135 140

Pro Asn Leu Ser Pro Thr Leu Leu Pro Leu Asp Thr Lys Val Ser Val  
145 150 155 160

## P200300646WO SEQ ID list

Pro Leu Phe Cys Lys Cys Pro Ser Lys Asn Gln Leu Asn Lys Gly Ile  
 165 170 175  
 Lys Tyr Leu Ile Thr Tyr Val Trp Gln Asp Asn Asp Asn Val Thr Leu  
 180 185 190  
 Val Ser Ser Lys Phe Gly Ala Ser Gln Val Glu Met Leu Ala Glu Asn  
 195 200 205  
 Asn His Asn Phe Thr Ala Ser Thr Asn Arg Ser Val Leu Ile Pro Val  
 210 215 220  
 Thr Ser Leu Pro Lys Leu Asp Gln Pro Ser Ser Asn Gly Arg Lys Ser  
 225 230 235 240  
 Ser Ser Gln Asn Leu Ala Leu Ile Ile Gly Ile Ser Leu Gly Ser Ala  
 245 250 255  
 Phe Phe Ile Leu Val Leu Thr Leu Ser Leu Val Tyr Val Tyr Cys Leu  
 260 265 270  
 Lys Met Lys Arg Leu Asn Arg Ser Thr Ser Ser Ser Glu Thr Ala Asp  
 275 280 285  
 Lys Leu Leu Ser Gly Val Ser Gly Tyr Val Ser Lys Pro Thr Met Tyr  
 290 295 300  
 Glu Ile Asp Ala Ile Met Glu Gly Thr Thr Asn Leu Ser Asp Asn Cys  
 305 310 315 320  
 Lys Ile Gly Glu Ser Val Tyr Lys Ala Asn Ile Asp Gly Arg Val Leu  
 325 330 335  
 Ala Val Lys Lys Ile Lys Lys Asp Ala Ser Glu Glu Leu Lys Ile Leu  
 340 345 350  
 Gln Lys Val Asn His Gly Asn Leu Val Lys Leu Met Gly Val Ser Ser  
 355 360 365  
 Asp Asn Asp Gly Asn Cys Phe Leu Val Tyr Glu Tyr Ala Glu Asn Gly  
 370 375 380  
 Ser Leu Glu Glu Trp Leu Phe Ser Glu Ser Ser Lys Thr Ser Asn Ser  
 385 390 395 400  
 Val Val Ser Leu Thr Trp Ser Gln Arg Ile Thr Ile Ala Met Asp Val  
 405 410 415  
 Ala Ile Gly Leu Gln Tyr Met His Glu His Thr Tyr Pro Arg Ile Ile  
 420 425 430

## P200300646WO SEQ ID list

His Arg Asp Ile Thr Thr Ser Asn Ile Leu Leu Gly Ser Asn Phe Lys  
 435 440 445

Ala Lys Ile Ala Asn Phe Gly Met Ala Arg Thr Ser Thr Asn Ser Met  
 450 455 460

Met Pro Lys Ile Asp Val Phe Ala Phe Gly Val Val Leu Ile Glu Leu  
 465 470 475 480

Leu Thr Gly Lys Lys Ala Met Thr Thr Lys Glu Asn Gly Glu Val Val  
 485 490 495

Ile Leu Trp Lys Asp Phe Trp Lys Ile Phe Asp Leu Glu Gly Asn Arg  
 500 505 510

Glu Glu Arg Leu Arg Lys Trp Met Asp Pro Lys Leu Glu Ser Phe Tyr  
 515 520 525

Pro Ile Asp Asn Ala Leu Ser Leu Ala Ser Leu Ala Val Asn Cys Thr  
 530 535 540

Ala Asp Lys Ser Leu Ser Arg Pro Thr Ile Ala Glu Ile Val Leu Cys  
 545 550 555 560

Leu Ser Leu Leu Asn Gln Pro Ser Ser Glu Pro Met Leu Glu Arg Ser  
 565 570 575

Leu Thr Ser Gly Leu Asp Ala Glu Ala Thr His Val Val Thr Ser Val  
 580 585 590

Ile Ala Arg  
 595

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 <211> 24  
 <212> DNA  
 <213> Phaseolus vulgaris

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 <221> misc\_feature  
 <222> (1)..(24)  
 <223> Primer to amplify fragment of NPR5

<400> 33  
 cattgcaara gccagtaaca taga

24

<210> 34  
 <211> 30  
 <212> DNA  
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<220>  
 <221> misc\_feature

## P200300646WO SEQ ID list

<222> (1)..(30)  
 <223> To amplify a fragment of NPR5  
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 <210> 35  
 <211> 35  
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 <213> Phaseolus vulgaris  
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 <221> misc\_feature  
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 <223> NPR5 5'RACE primer  
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 cgactgggat atgtatgtca catatgtttc acatg 35  
 <210> 36  
 <211> 22  
 <212> DNA  
 <213> Phaseolus vulgaris  
 <220>  
 <221> misc\_feature  
 <222> (1)..(22)  
 <223> NPR5 3' RACE primer  
 <400> 36  
 gatagaattg cttactggca gg 22  
 <210> 37  
 <211> 21  
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 <213> Phaseolus vulgaris  
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 <221> misc\_feature  
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 <223> NPR5 gene PCR primer  
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 <221> misc\_feature  
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 <223> NPR5 gene PCR primer  
 <400> 38  
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 <210> 39

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 <213> Phaseolus vulgaris

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 <221> CDS  
 <222> (173)..(1963)

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 <221> 3'UTR  
 <222> (1964)..(2164)

<400> 39  
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 ccagtgatag tagactgcct cataactttc atttggttcac aacttcacat ca atg gct 178  
 Met Ala  
 1  
 gtc ttc ttt gtt tct ctt act ctt ggt gct cag att ctt tat gtg gta 226  
 Val Phe Phe Val Ser Leu Thr Leu Gly Ala Gln Ile Leu Tyr Val Val  
 5 10 15  
 ctc atg ttt ttc act tgt att gaa gct caa tca caa cag acc aat gga 274  
 Leu Met Phe Phe Thr Cys Ile Glu Ala Gln Ser Gln Gln Thr Asn Gly  
 20 25 30  
 aca aac ttt tca tgc cct tcc aat tca cct cct tca tgt gaa aca tat 322  
 Thr Asn Phe Ser Cys Pro Ser Asn Ser Pro Pro Ser Cys Glu Thr Tyr  
 35 40 45 50  
 gtg aca tac ata tcc cag tcg cca aat ttt ttg agt ctg acc agc gta 370  
 Val Thr Tyr Ile Ser Gln Ser Pro Asn Phe Leu Ser Leu Thr Ser Val  
 55 60 65  
 tct aat ata ttt gac acg agt cct ttg tca att gcc aga gcc agc aac 418  
 Ser Asn Ile Phe Asp Thr Ser Pro Leu Ser Ile Ala Arg Ala Ser Asn  
 70 75 80  
 tta cag cat gag gaa gac aag ttg att cca ggc caa gtc tta ctg ata 466  
 Leu Gln His Glu Glu Asp Lys Leu Ile Pro Gly Gln Val Leu Leu Ile  
 85 90 95  
 cca gta acc tgt ggt tgc act gga aac cgc tct ttc gcc aac atc tcc 514  
 Pro Val Thr Cys Gly Cys Thr Gly Asn Arg Ser Phe Ala Asn Ile Ser  
 100 105 110  
 tat gag atc aac caa ggt gat agc ttc tac ttt gtt gcg acc act tta 562  
 Tyr Glu Ile Asn Gln Gly Asp Ser Phe Tyr Phe Val Ala Thr Thr Leu  
 115 120 125 130  
 tac cag aat ctc aca aat tgg cat gca gtg atg gat tta aac cca ggt 610  
 Tyr Gln Asn Leu Thr Asn Trp His Ala Val Met Asp Leu Asn Pro Gly  
 135 140 145  
 cta agt caa ttt act ttg cca ata ggc atc caa gtt gta att cct tta 658  
 Leu Ser Gln Phe Thr Leu Pro Ile Gly Ile Gln Val Val Ile Pro Leu  
 150 155 160  
 ttc tgc aag tgt cct tca aag aac cag ctg gat aga ggg ata aag tac 706  
 Phe Cys Lys Cys Pro Ser Lys Asn Gln Leu Asp Arg Gly Ile Lys Tyr

P200300646WO SEQ ID list																
165	170															175
ctg atc act cac gtc tgg cag ccc aat gac aat gtt tcc ttt gta agt																754
Leu Ile Thr His Val Trp Gln Pro Asn Asp Asn Val Ser Phe Val Ser																
180	185															190
aac aag tta ggt gca tca cca cag gac ata ttg agt gaa aac aac tat																802
Asn Lys Leu Gly Ala Ser Pro Gln Asp Ile Leu Ser Glu Asn Asn Tyr																210
195	200															205
ggt caa aat ttc act gcc gca agc aac ctt cca gtt ttg atc cca gtt																850
Gly Gln Asn Phe Thr Ala Ala Ser Asn Leu Pro Val Leu Ile Pro Val																225
215	220															225
aca ctc ttg cca gat ctt att caa tct cct tca gat gga aga aaa cac																898
Thr Leu Leu Pro Asp Leu Ile Gln Ser Pro Ser Asp Gly Arg Lys His																240
230	235															240
aga att ggt ctt cca gtt ata att ggt atc agc ctg gga tgc aca cta																946
Arg Ile Gly Leu Pro Val Ile Ile Gly Ile Ser Leu Gly Cys Thr Leu																255
245	250															255
ctg gtt gtg gtt tca gca ata tta ctg gtg tgt gta tgt tgt ctg aaa																994
Leu Val Val Val Ser Ala Ile Leu Leu Val Cys Val Cys Cys Leu Lys																270
260	265															270
atg aag agt ttg aat agg agt gct tca tca gct gaa act gca gat aaa																1042
Met Lys Ser Leu Asn Arg Ser Ala Ser Ser Ala Glu Thr Ala Asp Lys																290
275	280															285
cta ctt tct gga gtt tca ggc tat gta agt aag cct aca atg tat gaa																1090
Leu Leu Ser Gly Val Ser Gly Tyr Val Ser Lys Pro Thr Met Tyr Glu																305
295	300															300
act ggt gca ata ttg gaa gct act atg aac ctc agt gag cag tgc aag																1138
Thr Gly Ala Ile Leu Glu Ala Thr Met Asn Leu Ser Glu Gln Cys Lys																315
310	315															315
att ggg gaa tca gtg tac aag gct aac ata gag ggt aag gtt tta gca																1186
Ile Gly Glu Ser Val Tyr Lys Ala Asn Ile Glu Gly Lys Val Leu Ala																335
325	330															335
gta aaa aga ttc aag gaa gat gtc acg gag gag ctg aaa att ctg cag																1234
Val Lys Arg Phe Lys Glu Asp Val Thr Glu Glu Leu Lys Ile Leu Gln																350
340	345															350
aag gtg aat cat gga aat ctg gtg aaa cta atg ggt gtc tca tca gat																1282
Lys Val Asn His Gly Asn Leu Val Lys Leu Met Gly Val Ser Ser Asp																370
355	360															365
aat gat gga aat tgt ttt gtg gtt tat gaa tat gct gaa aat ggg tct																1330
Asn Asp Gly Asn Cys Phe Val Val Tyr Glu Tyr Ala Glu Asn Gly Ser																385
375	380															385
ctt gaa gag ttg ctt ttc gcc aag tct tgt tca gag aca tca aac tca																1378
Leu Glu Glu Trp Leu Phe Ala Lys Ser Cys Ser Glu Thr Ser Asn Ser																400
390	395															400
agg acc tcc ctt aca ttg tgc cag agg ata agc ata gca gtg gat gtt																1426
Arg Thr Ser Leu Thr Trp Cys Gln Arg Ile Ser Ile Ala Val Asp Val																415
405	410															415
tca atg ggt ctg cag tac atg cat gaa cat gct tat cca aga ata gtc																1474
Ser Met Gly Leu Gln Tyr Met His Glu His Ala Tyr Pro Arg Ile Val																430
420	425															430
cac agg gac atc aca agc agt aat atc ctt ctt gac tcc aac ttt aag																1522
His Arg Asp Ile Thr Ser Ser Asn Ile Leu Leu Asp Ser Asn Phe Lys																



P200300646WO SEQ ID list

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atg tca aaa ata gat gta ttt gct ttt ggg gtg gtt ctg ata gaa ttg				1618
Met Ser Lys Ile Asp Val Phe Ala Phe Gly Val Val Leu Ile Glu Leu	470	475	480	
ctt act ggc agg aaa gcc atg aca acc aaa gaa aat ggt gag gtg gtt				1666
Leu Thr Gly Arg Lys Ala Met Thr Thr Lys Glu Asn Gly Glu Val Val	485	490	495	
atg ctg tgg aag gac att tgg aag atc ttt gat caa gaa gag aat aga				1714
Met Leu Trp Lys Asp Ile Trp Lys Ile Phe Asp Gln Glu Glu Asn Arg	500	505	510	
gag gag agg ctc aga aaa tgg atg gat cct aag tta gat aat tat tat				1762
Glu Glu Arg Leu Arg Lys Trp Met Asp Pro Lys Leu Asp Asn Tyr Tyr	515	520	525	530
cct att gat tat gct ctc agc ttg gcc tcc ttg gca gtg aat tgc act				1810
Pro Ile Asp Tyr Ala Leu Ser Leu Ala Ser Leu Ala Val Asn Cys Thr	535	540	545	
gca gac aag tct ttg tcc aga cca acc ata gca gaa att gtc ctt agt				1858
Ala Asp Lys Ser Leu Ser Arg Pro Thr Ile Ala Glu Ile Val Leu Ser	550	555	560	
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Leu Ser Leu Thr Gln Pro Ser Pro Ala Thr Leu Glu Arg Ser Leu	565	570	575	
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Thr Ser Ser Gly Leu Asp Val Glu Ala Thr Gln Ile Val Thr Ser Ile	580	585	590	
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Ser Ala Arg	595			
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agttttcaac atttagtggt tccatccctg ttgttcttta tgtttgaggt agagttcgta				2123
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 <213> Phaseolus vulgaris

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Asn Gly Thr Asn Phe Ser Cys Pro Ser Asn Ser Pro Pro Ser Cys Glu  
 35 40 45

## P200300646WO SEQ ID list

Thr Tyr Val Thr Tyr Ile Ser Gln Ser Pro Asn Phe Leu Ser Leu Thr  
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 Ser Val Ser Asn Ile Phe Asp Thr Ser Pro Leu Ser Ile Ala Arg Ala  
 65 70 75 80  
 Ser Asn Leu Gln His Glu Glu Asp Lys Leu Ile Pro Gly Gln Val Leu  
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 Leu Ile Pro Val Thr Cys Gly Cys Thr Gly Asn Arg Ser Phe Ala Asn  
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 Ile Ser Tyr Glu Ile Asn Gln Gly Asp Ser Phe Tyr Phe Val Ala Thr  
 115 120 125  
 Thr Leu Tyr Gln Asn Leu Thr Asn Trp His Ala Val Met Asp Leu Asn  
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 Pro Gly Leu Ser Gln Phe Thr Leu Pro Ile Gly Ile Gln Val Val Ile  
 145 150 155 160  
 Pro Leu Phe Cys Lys Cys Pro Ser Lys Asn Gln Leu Asp Arg Gly Ile  
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 Lys Tyr Leu Ile Thr His Val Trp Gln Pro Asn Asp Asn Val Ser Phe  
 180 185 190  
 Val Ser Asn Lys Leu Gly Ala Ser Pro Gln Asp Ile Leu Ser Glu Asn  
 195 200 205  
 Asn Tyr Gly Gln Asn Phe Thr Ala Ala Ser Asn Leu Pro Val Leu Ile  
 210 215 220  
 Pro Val Thr Leu Leu Pro Asp Leu Ile Gln Ser Pro Ser Asp Gly Arg  
 225 230 235 240  
 Lys His Arg Ile Gly Leu Pro Val Ile Ile Gly Ile Ser Leu Gly Cys  
 245 250 255  
 Thr Leu Leu Val Val Val Ser Ala Ile Leu Leu Val Cys Val Cys Cys  
 260 265 270  
 Leu Lys Met Lys Ser Leu Asn Arg Ser Ala Ser Ser Ala Glu Thr Ala  
 275 280 285  
 Asp Lys Leu Leu Ser Gly Val Ser Gly Tyr Val Ser Lys Pro Thr Met  
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 Tyr Glu Thr Gly Ala Ile Leu Glu Ala Thr Met Asn Leu Ser Glu Gln  
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## P200300646WO SEQ ID list

Cys Lys Ile Gly Glu Ser Val Tyr Lys Ala Asn Ile Glu Gly Lys Val  
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 355 360 365  
 Ser Asp Asn Asp Gly Asn Cys Phe Val Val Tyr Glu Tyr Ala Glu Asn  
 370 375 380  
 Gly Ser Leu Glu Glu Trp Leu Phe Ala Lys Ser Cys Ser Glu Thr Ser  
 385 390 395 400  
 Asn Ser Arg Thr Ser Leu Thr Trp Cys Gln Arg Ile Ser Ile Ala Val  
 405 410 415  
 Asp Val Ser Met Gly Leu Gln Tyr Met His Glu His Ala Tyr Pro Arg  
 420 425 430  
 Ile Val His Arg Asp Ile Thr Ser Ser Asn Ile Leu Leu Asp Ser Asn  
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 Phe Lys Ala Lys Ile Ala Asn Phe Ser Met Ala Arg Thr Phe Thr Asn  
 450 455 460  
 Pro Met Met Ser Lys Ile Asp Val Phe Ala Phe Gly Val Val Leu Ile  
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 Glu Leu Leu Thr Gly Arg Lys Ala Met Thr Thr Lys Glu Asn Gly Glu  
 485 490 495  
 Val Val Met Leu Trp Lys Asp Ile Trp Lys Ile Phe Asp Gln Glu Glu  
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 Cys Thr Ala Asp Lys Ser Leu Ser Arg Pro Thr Ile Ala Glu Ile Val  
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## P200300646WO SEQ ID list

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 caa cag gac aat aga aca aac ttt tca tgc cct tct gat tca ccg cct 206  
 Gln Gln Asp Asn Arg Thr Asn Phe Ser Cys Pro Ser Asp Ser Pro Pro  
                   35                  40                  45  
 tca tgt gaa acc tat gta aca tac att gct cag tct cca aat ttt ttg 254  
 Ser Cys Glu Thr Tyr Val Thr Tyr Ile Ala Gln Ser Pro Asn Phe Leu  
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 agt cta acc aac ata tcc aat ata ttt gac aca agc cct tta tcc att 302  
 Ser Leu Thr Asn Ile Ser Asn Ile Phe Asp Thr Ser Pro Leu Ser Ile  
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## P200300646WO SEQ ID list

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Gln	Val	Leu	Leu	Val	Pro	Val	Thr	Cys	Gly	Cys	Thr	Gly	Asn	Arg	Ser	
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ttt	gcc	aat	atc	tcc	tat	gag	atc	aac	caa	ggt	gat	agc	ttc	tac	ttt	446
Phe	Ala	Asn	Ile	Ser	Tyr	Glu	Ile	Asn	Gln	Gly	Asp	Ser	Phe	Tyr	Phe	
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Val	Ala	Thr	Thr	Ser	Tyr	Glu	Asn	Leu	Thr	Asn	Trp	Arg	Ala	Val	Met	
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Asp	Leu	Asn	Pro	Val	Leu	Ser	Pro	Asn	Lys	Leu	Pro	Ile	Gly	Ile	Gln	
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Val	Val	Phe	Pro	Leu	Phe	Cys	Lys	Cys	Pro	Ser	Lys	Asn	Gln	Leu	Asp	
	160					165					170					
aaa	gag	ata	aag	tac	ctg	att	aca	tac	gtg	tgg	aag	ccc	ggt	gac	aat	638
Lys	Glu	Ile	Lys	Tyr	Leu	Ile	Thr	Tyr	Val	Trp	Lys	Pro	Gly	Asp	Asn	
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gtt	tcc	ctt	gta	agt	gac	aag	ttt	ggt	gca	tca	cca	gag	gac	ata	atg	686
Val	Ser	Leu	Val	Ser	Asp	Lys	Phe	Gly	Ala	Ser	Pro	Glu	Asp	Ile	Met	
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agt	gaa	aac	aac	tat	ggt	cag	aac	ttt	act	gct	gca	aac	aac	ctt	cca	734
Ser	Glu	Asn	Asn	Tyr	Gly	Gln	Asn	Phe	Thr	Ala	Ala	Asn	Asn	Leu	Pro	
			210					215					220			
gtt	ctg	atc	cca	gtg	aca	cgc	ttg	cca	gtt	ctt	gct	cga	tct	cct	tcg	782
Val	Leu	Ile	Pro	Val	Thr	Arg	Leu	Pro	Val	Leu	Ala	Arg	Ser	Pro	Ser	
		225					230					235				
gac	gga	aga	aaa	ggc	gga	att	cg	ctt	ccg	gtt	ata	att	ggt	att	agc	830
Asp	Gly	Arg	Lys	Gly	Gly	Ile	Arg	Leu	Pro	Val	Ile	Ile	Gly	Ile	Ser	
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Leu	Gly	Cys	Thr	Leu	Leu	Val	Leu	Val	Leu	Ala	Val	Leu	Leu	Val	Tyr	
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Val	Tyr	Cys	Leu	Lys	Met	Lys	Thr	Leu	Asn	Arg	Ser	Ala	Ser	Ser	Ala	
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gaa	act	gca	gat	aaa	cta	ctt	tct	gga	gtt	tca	ggc	tat	gta	agt	aag	974
Glu	Thr	Ala	Asp	Lys	Leu	Leu	Ser	Gly	Val	Ser	Gly	Tyr	Val	Ser	Lys	
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cct	acc	atg	tat	gaa	act	gat	gcg	atc	atg	gaa	gct	aca	atg	aac	ctc	1022
Pro	Thr	Met	Tyr	Glu	Thr	Asp	Ala	Ile	Met	Glu	Ala	Thr	Met	Asn	Leu	
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agt	gag	cag	tgc	aag	att	ggg	gaa	tca	gtg	tac	aag	gca	aac	ata	gag	1070
Ser	Glu	Gln	Cys	Lys	Ile	Gly	Glu	Ser	Val	Tyr	Lys	Ala	Asn	Ile	Glu	
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Gly	Lys	Val	Leu	Ala	Val	Lys	Arg	Phe	Lys	Glu	Asp	Val	Thr	Glu	Glu	
335					340					345					350	
ctg	aaa	att	ctg	cag	aag	gtg	aat	cat	ggg	aat	ctg	gtg	aaa	cta	atg	1166

## P200300646WO SEQ ID list

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 gct gaa aat ggg tct ctt gat gag tgg cta ttc tcc aag tct tgt tca 1262  
 Ala Glu Asn Gly Ser Leu Asp Glu Trp Leu Phe Ser Lys Ser Cys Ser  
 385 390 395  
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 Asp Thr Ser Asn Ser Arg Ala Ser Leu Thr Trp Cys Gln Arg Ile Ser  
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 Phe Thr Asn Pro Met Met Pro Lys Ile Asp Val Phe Ala Phe Gly Val  
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 Val Leu Ile Glu Leu Leu Thr Gly Arg Lys Ala Met Thr Thr Lys Glu  
 480 485 490  
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 545 550 555  
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 Glu Ile Val Leu Ser Leu Ser Leu Leu Thr Gln Pro Ser Pro Ala Thr  
 560 565 570  
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 Leu Glu Arg Ser Leu Thr Ser Ser Gly Leu Asp Val Glu Ala Thr Gln  
 575 580 585 590  
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 Ile Val Thr Ser Ile Ala Ala Arg  
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 ttggtttggg ggagtgtgtt caaaatttcg tttttttcca tccctgttat tttttttaag 2012  
 tttggggtag agtcagcaaaa aatggaagtt gcaattgacc tcagactaaa cttgcttatt 2072

## P200300646WO SEQ ID list

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 20 25 30

Asp Asn Arg Thr Asn Phe Ser Cys Pro Ser Asp Ser Pro Pro Ser Cys  
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Glu Thr Tyr Val Thr Tyr Ile Ala Gln Ser Pro Asn Phe Leu Ser Leu  
 50 55 60

Thr Asn Ile Ser Asn Ile Phe Asp Thr Ser Pro Leu Ser Ile Ala Arg  
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Ala Ser Asn Leu Glu Pro Met Asp Asp Lys Leu Val Lys Asp Gln Val  
 85 90 95

Leu Leu Val Pro Val Thr Cys Gly Cys Thr Gly Asn Arg Ser Phe Ala  
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Asn Ile Ser Tyr Glu Ile Asn Gln Gly Asp Ser Phe Tyr Phe Val Ala  
 115 120 125

Thr Thr Ser Tyr Glu Asn Leu Thr Asn Trp Arg Ala Val Met Asp Leu  
 130 135 140

Asn Pro Val Leu Ser Pro Asn Lys Leu Pro Ile Gly Ile Gln Val Val  
 145 150 155 160

Phe Pro Leu Phe Cys Lys Cys Pro Ser Lys Asn Gln Leu Asp Lys Glu  
 165 170 175

Ile Lys Tyr Leu Ile Thr Tyr Val Trp Lys Pro Gly Asp Asn Val Ser  
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Leu Val Ser Asp Lys Phe Gly Ala Ser Pro Glu Asp Ile Met Ser Glu  
 195 200 205

Asn Asn Tyr Gly Gln Asn Phe Thr Ala Ala Asn Asn Leu Pro Val Leu  
 210 215 220

Ile Pro Val Thr Arg Leu Pro Val Leu Ala Arg Ser Pro Ser Asp Gly  
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P200300646WO SEQ ID list

500

505

510

Glu Asn Arg Glu Glu Arg Leu Lys Lys Trp Met Asp Pro Lys Leu Glu  
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Val Leu Ser Leu Ser Leu Leu Thr Gln Pro Ser Pro Ala Thr Leu Glu  
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 Cys Ala Phe Phe Lys Val Asp Ser Lys Cys Val Lys Gly Cys Asp Leu  
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 gct tta gct tct tac tat gta atg cct tta gtt gaa ctc cca act ata 206  
 Ala Leu Ala Ser Tyr Tyr Val Met Pro Leu Val Glu Leu Pro Thr Ile  
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aaa Lys	aag Lys	gaa Glu	gaa Glu	gag Glu 260	aaa Lys	act Thr	ata Ile	ctg Leu	ccc Pro 265	caa Gln	gtt Val	tct Ser	aag Lys	gcg Ala 270	ctt Leu	878
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gaa Glu	cat His	acc Thr	gtg Val 435	cct Pro	gtg Val	tat Tyr	atc Ile	cat His 440	cgc Arg	gat Asp	gta Val	aaa Lys	tca Ser	gca Ala	aac Asn	1406
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gga Gly 480	act Thr	ttt Phe	gga Gly	tac Tyr	atg Met 485	cca Pro	cca Pro	gaa Glu	tat Tyr	gct Ala 490	caa Gln	tat Tyr	ggg Gly	gac Asp	gtt Val 495	1550
tct Ser	ccg Pro	aaa Lys	ata Ile	gac Asp	gta Val	tat Tyr	gct Ala	ttt Phe	gga Gly	gtt Val	gtt Val	ctt Leu	tat Tyr	gaa Glu	ctg Leu	1598

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gat cct tca gaa gct ctt cgc aaa ttg gtg gat cct agg ctt aaa gaa Asp Pro Ser Glu Ala Leu Arg 550 Lys Leu Val Asp Pro Arg Leu Lys Glu			1742
aac tat cca att gat tct gtt tta aag atg gct caa ctt ggg aga gca Asn Tyr Pro Ile Asp Ser 565 Val Leu Lys Met Ala Gln Leu Gly Arg Ala 575			1790
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Asn Tyr Met Gln Ser Lys Ile Val Thr Asn Ser Ser Asp Val Leu Asn 50 55 60			
Ser Tyr Asn Lys Val Leu Val Thr Asn His Gly Asn Ile Phe Ser Tyr 65 70 75 80			
Phe Arg Ile Asn Ile Pro Phe Pro Cys Glu Cys Ile Gly Gly Glu Phe 85 90 95			

## P200300646WO SEQ ID list

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 Asp Tyr Gly Leu Phe Val Thr Tyr Pro Leu Arg Ser Thr Asp Ser Leu  
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 Glu Lys Ile Ala Asn Glu Ser Lys Leu Asp Glu Gly Leu Ile Gln Asn  
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 Phe Asn Pro Asp Val Asn Phe Ser Arg Gly Ser Gly Ile Val Phe Ile  
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 Pro Gly Arg Asp Lys Asn Gly Glu Tyr Val Pro Leu Tyr Pro Lys Thr  
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 Ala Val Leu Leu Phe Val Ile Cys Ile Tyr Val Lys Tyr Phe Gln Lys  
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 Lys Glu Glu Glu Lys Thr Ile Leu Pro Gln Val Ser Lys Ala Leu Ser  
 260 265 270  
 Thr Gln Asp Gly Asn Ala Ser Ser Ser Gly Glu Tyr Glu Thr Ser Gly  
 275 280 285  
 Ser Ser Gly His Gly Thr Gly Ser Ala Ala Gly Leu Thr Gly Ile Met  
 290 295 300  
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 Asp Asn Phe Ser Leu Asp Asn Lys Ile Gly Gln Gly Gly Phe Gly Ala  
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 Val Tyr Tyr Ala Glu Leu Arg Gly Glu Lys Thr Ala Ile Lys Lys Met  
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 Gln Tyr Leu His Gly Lys Asp Lys Glu Pro Leu Pro Trp Ser Ser Arg  
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 Val Gln Ile Ala Leu Asp Ser Ala Arg Gly Leu Glu Tyr Ile His Glu  
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 His Thr Val Pro Val Tyr Ile His Arg Asp Val Lys Ser Ala Asn Ile  
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 Leu Ile Asp Lys Asn Leu Arg Gly Lys Val Ala Asp Phe Gly Leu Thr  
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 Lys Leu Ile Glu Val Gly Asn Ser Thr Leu His Thr Arg Leu Val Gly  
 465 470 475 480  
 Thr Phe Gly Tyr Met Pro Pro Glu Tyr Ala Gln Tyr Gly Asp Val Ser  
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 Pro Lys Ile Asp Val Tyr Ala Phe Gly Val Val Leu Tyr Glu Leu Ile  
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Gly Asp Thr Tyr Asp Leu Ile Ala Asn Thr Tyr Tyr Ala Ser Leu Thr  
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Pro Val Lys Ala Lys Val Asn Val Thr Val Asn Cys Ser Cys Gly Asn  
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Ser Gln Ile Ser Lys Asp Tyr Gly Leu Phe Ile Thr Tyr Pro Leu Arg  
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Pro Arg Asp Thr Leu Glu Lys Ile Ala Arg His Ser Asn Leu Asp Glu  
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 Asp Val Ser Pro Lys Ile Asp Val Tyr Ala Phe Gly Val Val Leu Tyr  
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 Leu Gly His Val Phe Glu Tyr Thr Ala Asn Glu Gly Asp Thr Tyr Asp  
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 260 265 270  
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Lys Asn Ala Ile Leu Lys Thr Gly Glu Ser Ala Val Glu Ser Lys Gly  
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